

### Abstract

A substrate-processing apparatus (100, 40) comprises a radical-forming unit (26) for forming the nitrogen radicals and oxygen radicals through a high-frequency plasma, a processing vessel (21) in which a substrate (W) to be processed is held, and a gas-supplying unit (30) which is connected to the radical-forming unit. The gas-supplying unit (30) controls the mixture ratio between a first raw material gas containing the nitrogen and a second raw material gas containing oxygen, and supplies a mixture gas of a desired mixture ratio to the radical-forming unit. By supplying the nitrogen radicals and oxygen radicals mixed at the controlled mixture ratio to the surface of the substrate, an insulating film having a desired nitrogen concentration is formed on the surface of the substrate.